

list of assignments

- electron motion in crystals: electric fields
- fermi distribution
- electron motion in magnetic fields
- measurement of the Fermi energy
- the Boltzmann equation for the electron distribution (difficult)
- reconstruction and deconstruction at solid surfaces
- the functioning of gas-sensors
- electron conduction theory
- properties of semiconductors and junctions
- other treatments of dynamic correlation
- phonon and electron diffraction by defects

the following assignments require access to a quantum chemistry package, like quantum-espresso

- calculate and plot the bands of silicon bulk and of a silicon slab
- calculate and plot the bands for a single graphite layer
- find the geometric parameters for graphite under two different DFs and values of K_{cut} .